

# Work Order ID 95653

January-16-13 8:35:40 AM

**\*95653\***

Page 1

Item ID: D3997-21

Accept

**\*N900040100\***

Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Placard

Start Date: 1/16/13 Start Qty: 10.00

**\*10\***

Cust Item ID:

Required Date: 1/30/13 Req'd Qty: 10.00

**\*10\***

Customer:

Reference:

Approvals: Process Plan: MLJ

Date: 13-01-16 Tooling:

Date:

Run Start **\*NR1\***

QC:

Date: SPC (Y/N):

Date:

Stop **\*NR2\***

| Sequence ID/<br>Work Center ID | Operation<br>Description                   | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
| <b>Draw Nbr</b>                | <b>Revision Nbr</b>                        |                      |         |        |              |               |               |                  |                |
| D3997                          | A  |                      |         |        |              |               |               |                  |                |
| 100                            |  | 0.00                 |         |        |              |               |               |                  |                |
| <b>*100*</b>                   |  |                      |         |        |              |               |               |                  |                |
| Purchasing                     |  | 0.00                 |         |        |              |               |               |                  |                |
| Purchasing                     | Memo                                       |                      |         |        |              |               |               |                  |                |
|                                | Issue P/O: <u>15849</u>                    |                      |         |        |              |               |               |                  |                |
|                                | Manufacture as per Dwg D3997               |                      |         |        |              |               |               |                  |                |
|                                | Possible Supplier: Studio Lettrage         |                      |         |        |              |               |               |                  |                |
|                                | Material release note required             |                      |         |        |              |               |               |                  |                |
| 110                            | Receive & Inspect for Damage & Mat'l Certs | 0.00                 |         |        |              |               |               |                  |                |
| <b>*110*</b>                   |  |                      |         |        |              |               |               |                  |                |
| Packaging                      |  | 0.00                 |         |        |              |               |               |                  |                |
| Packaging                      | Memo                                       |                      |         |        |              |               |               |                  |                |
| 120                            | QC6- Inspect dimensions to drawing         | 0.00                 |         |        |              |               |               |                  |                |
| <b>*120*</b>                   |  |                      |         |        |              |               |               |                  |                |
| QC                             |  | 0.00                 |         |        |              |               |               |                  |                |
| Quality Control                | Memo                                       |                      |         |        |              |               |               |                  |                |

13-01-16

42/1/21 (10)

15  
2-89

13121

10

NCR: Yes / No

## WORK ORDER NON-CONFORMANCE / UPDATE

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

|  |   |   |                                      |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |
|--|---|---|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--|----------------------------------|--|------------------------------------|--|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Work Order Update <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><table style="width: 100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table> | Skid-tube <input type="checkbox"/>   | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> |  |
| Skid-tube <input type="checkbox"/>                           | Crosstube <input type="checkbox"/>  | Water Jet <input type="checkbox"/>  | Engineering <input type="checkbox"/> |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |
| Machining <input type="checkbox"/>                           | Small Fab <input type="checkbox"/>  | Prod. Eng. Coord. <input type="checkbox"/>  | Quality <input type="checkbox"/>     |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |
| Thermoforming <input type="checkbox"/>                       | Finishing <input type="checkbox"/>  | Rec/Store/Packaging <input type="checkbox"/>  | Other <input type="checkbox"/>       |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |
| Large Fab <input type="checkbox"/>                           | Composite <input type="checkbox"/>  | Supplier <input type="checkbox"/>   |                                      |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |

| Root Cause                             | Date | Step | Qty | Description of work order update or Non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|--|------|------|-----|---|-------------------|--------------------|-------------|--------------|--------------|
| Doc/Data <input type="checkbox"/>      |      |      |     |   |                   |                    |             |              |              |
| Equip/Tooling <input type="checkbox"/> |      |      |     |   |                   |                    |             |              |              |
| Operator <input type="checkbox"/>      |      |      |     |   |                   |                    |             |              |              |
| Material <input type="checkbox"/>      |      |      |     |   |                   |                    |             |              |              |
| Setup <input type="checkbox"/>         |      |      |     |   |                   |                    |             |              |              |
| Other <input type="checkbox"/>         |      |      |     |   |                   |                    |             |              |              |
| Process <input type="checkbox"/>       |      |      |     |   |                   |                    |             |              |              |
| Supplier <input type="checkbox"/>      |      |      |     |   |                   |                    |             |              |              |
| Training <input type="checkbox"/>      |      |      |     |   |                   |                    |             |              |              |
| Unapproved <input type="checkbox"/>    |      |      |     |   |                   |                    |             |              |              |

### FAULT CATEGORY

|   |   |  |
|---|---|--|
| <b>Landing Gear</b><br><input type="checkbox"/> Bending<br><input type="checkbox"/> Centre Not Concentric to O/S<br><input type="checkbox"/> Cracks<br><input type="checkbox"/> Crushed/Crimped<br><input type="checkbox"/> Cuffs<br><input type="checkbox"/> Heat Treat<br><input type="checkbox"/> Inspection Strip in Tube<br><input type="checkbox"/> Ripples in Bend<br><input type="checkbox"/> Torque Waves in Extrusion<br><input type="checkbox"/> Turning Sequence<br><input type="checkbox"/> Wave/Twist in Tube | <b>General</b><br><input type="checkbox"/> Bend<br><input type="checkbox"/> BOM/Route<br><input type="checkbox"/> Broken/Damaged<br><input type="checkbox"/> Burrs<br><input type="checkbox"/> Contamination<br><input type="checkbox"/> Countersink<br><input type="checkbox"/> Cut Too Short<br><input type="checkbox"/> Drill Holes<br><input type="checkbox"/> Drawing<br><input type="checkbox"/> Finish<br><input type="checkbox"/> Folio | <input type="checkbox"/> Grain<br><input type="checkbox"/> Hardware<br><input type="checkbox"/> Inspection Incomplete<br><input type="checkbox"/> Instructions Incomplete/Unclear<br><input type="checkbox"/> Maintenance<br><input type="checkbox"/> Mislabeled<br><input type="checkbox"/> Misread<br><input type="checkbox"/> Offset<br><input type="checkbox"/> Out of Calibration<br><input type="checkbox"/> Out of Sequence<br><input type="checkbox"/> Outside Dimensions<br><br><input type="checkbox"/> Ovalized<br><input type="checkbox"/> Over/Under tolerance<br><input type="checkbox"/> Part Incorrect<br><input type="checkbox"/> Part Lost/Missing<br><input type="checkbox"/> Part Moved<br><input type="checkbox"/> Positioned Wrong<br><input type="checkbox"/> Power Loss/Surge<br><br><input type="checkbox"/> Pressure/Forced<br><input type="checkbox"/> Temperature/Cure<br><input type="checkbox"/> Weld<br><input type="checkbox"/> Wrong Stock Pulled<br><br><input type="checkbox"/> Other |
|---|---|--|

# Work Order ID 95653

January-16-13 8:35:40 AM

**\*95653\***

Page 2

Item ID: D3997-21

Accept

**\*N900040100\***

Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Placard

Start Date: 1/16/13 Start Qty: 10.00

**\*10\***

Cust Item ID:

Required Date: 1/30/13 Req'd Qty: 10.00

**\*10\***

Customer:

Reference:

Approvals: Process Plan: Date: Tooling: Date:

Run Start **\*NR1\***

QC: Date: SPC (Y/N): Date:

Stop **\*NR2\***

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

130 Identify as per dwg & Stock Location: **SD4B** 0.00

**\*130\***

Packaging

Memo

0.00

Packaging

**10X**

**13-01-21**

140 QC21- Final Inspection - Work Order Release 0.00

**\*140\***

QC

Memo

0.00

Quality Control

**13/1/23**

**13-01-21**

NCR: Yes / No

## WORK ORDER NON-CONFORMANCE / UPDATE

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

|  |   |   |                                      |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |
|--|---|---|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--|----------------------------------|--|------------------------------------|--|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Work Order Update <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><table style="width: 100%; font-size: small;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table> | Skid-tube <input type="checkbox"/>   | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> |  |
| Skid-tube <input type="checkbox"/>                           | Crosstube <input type="checkbox"/>  | Water Jet <input type="checkbox"/>  | Engineering <input type="checkbox"/> |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |
| Machining <input type="checkbox"/>                           | Small Fab <input type="checkbox"/>  | Prod. Eng. Coord. <input type="checkbox"/>  | Quality <input type="checkbox"/>     |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |
| Thermoforming <input type="checkbox"/>                       | Finishing <input type="checkbox"/>  | Rec/Store/Packaging <input type="checkbox"/>  | Other <input type="checkbox"/>       |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |
| Large Fab <input type="checkbox"/>                           | Composite <input type="checkbox"/>  | Supplier <input type="checkbox"/>   |                                      |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |

| Root Cause                             | Date | Step | Qty | Description of work order update or Non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|--|------|------|-----|---|-------------------|--------------------|-------------|--------------|--------------|
| Doc/Data <input type="checkbox"/>      |      |      |     |   |                   |                    |             |              |              |
| Equip/Tooling <input type="checkbox"/> |      |      |     |   |                   |                    |             |              |              |
| Operator <input type="checkbox"/>      |      |      |     |   |                   |                    |             |              |              |
| Material <input type="checkbox"/>      |      |      |     |   |                   |                    |             |              |              |
| Setup <input type="checkbox"/>         |      |      |     |   |                   |                    |             |              |              |
| Other <input type="checkbox"/>         |      |      |     |   |                   |                    |             |              |              |
| Process <input type="checkbox"/>       |      |      |     |   |                   |                    |             |              |              |
| Supplier <input type="checkbox"/>      |      |      |     |   |                   |                    |             |              |              |
| Training <input type="checkbox"/>      |      |      |     |   |                   |                    |             |              |              |
| Unapproved <input type="checkbox"/>    |      |      |     |   |                   |                    |             |              |              |

### FAULT CATEGORY

|   |   |   |                                   |  |   |   |   |                               |  |   |                                     |  |   |  |   |                                |
|---|---|---|-----------------------------------|--|---|---|---|-------------------------------|--|---|-------------------------------------|--|---|--|---|--------------------------------|
| <b>Landing Gear</b><br><input type="checkbox"/> Bending<br><input type="checkbox"/> Centre Not Concentric to O/S<br><input type="checkbox"/> Cracks<br><input type="checkbox"/> Crushed/Crimped<br><input type="checkbox"/> Cuffs<br><input type="checkbox"/> Heat Treat<br><input type="checkbox"/> Inspection Strip in Tube<br><input type="checkbox"/> Ripples in Bend<br><input type="checkbox"/> Torque Waves in Extrusion<br><input type="checkbox"/> Turning Sequence<br><input type="checkbox"/> Wave/Twist in Tube   | <b>General</b><br><input type="checkbox"/> Bend<br><input type="checkbox"/> BOM/Route<br><input type="checkbox"/> Broken/Damaged<br><input type="checkbox"/> Burrs<br><input type="checkbox"/> Contamination<br><input type="checkbox"/> Countersink<br><input type="checkbox"/> Cut Too Short<br><input type="checkbox"/> Drill Holes<br><input type="checkbox"/> Drawing<br><input type="checkbox"/> Finish<br><input type="checkbox"/> Folio | <input type="checkbox"/> Grain<br><input type="checkbox"/> Hardware<br><input type="checkbox"/> Inspection Incomplete<br><input type="checkbox"/> Instructions Incomplete/Unclear<br><input type="checkbox"/> Maintenance<br><input type="checkbox"/> Mislabeled<br><input type="checkbox"/> Misread<br><input type="checkbox"/> Offset<br><input type="checkbox"/> Out of Calibration<br><input type="checkbox"/> Out of Sequence<br><input type="checkbox"/> Outside Dimensions |                                   |  |   |   |   |                               |  |   |                                     |  |   |  |   |                                |
| <table style="width: 100%; font-size: small;"> <tr> <td><input type="checkbox"/> Ovalized</td> <td><input type="checkbox"/> Pressure/Forced</td> </tr> <tr> <td><input type="checkbox"/> Over/Under tolerance</td> <td><input type="checkbox"/> Temperature/Cure</td> </tr> <tr> <td><input type="checkbox"/> Part Incorrect</td> <td><input type="checkbox"/> Weld</td> </tr> <tr> <td><input type="checkbox"/> Part Lost/Missing</td> <td><input type="checkbox"/> Wrong Stock Pulled</td> </tr> <tr> <td><input type="checkbox"/> Part Moved</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Positioned Wrong</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Power Loss/Surge</td> <td><input type="checkbox"/> Other</td> </tr> </table> |   |   | <input type="checkbox"/> Ovalized | <input type="checkbox"/> Pressure/Forced | <input type="checkbox"/> Over/Under tolerance | <input type="checkbox"/> Temperature/Cure | <input type="checkbox"/> Part Incorrect | <input type="checkbox"/> Weld | <input type="checkbox"/> Part Lost/Missing | <input type="checkbox"/> Wrong Stock Pulled | <input type="checkbox"/> Part Moved |  | <input type="checkbox"/> Positioned Wrong |  | <input type="checkbox"/> Power Loss/Surge | <input type="checkbox"/> Other |
| <input type="checkbox"/> Ovalized   | <input type="checkbox"/> Pressure/Forced  |   |                                   |  |   |   |   |                               |  |   |                                     |  |   |  |   |                                |
| <input type="checkbox"/> Over/Under tolerance   | <input type="checkbox"/> Temperature/Cure   |   |                                   |  |   |   |   |                               |  |   |                                     |  |   |  |   |                                |
| <input type="checkbox"/> Part Incorrect   | <input type="checkbox"/> Weld   |   |                                   |  |   |   |   |                               |  |   |                                     |  |   |  |   |                                |
| <input type="checkbox"/> Part Lost/Missing  | <input type="checkbox"/> Wrong Stock Pulled   |   |                                   |  |   |   |   |                               |  |   |                                     |  |   |  |   |                                |
| <input type="checkbox"/> Part Moved   |   |   |                                   |  |   |   |   |                               |  |   |                                     |  |   |  |   |                                |
| <input type="checkbox"/> Positioned Wrong   |   |   |                                   |  |   |   |   |                               |  |   |                                     |  |   |  |   |                                |
| <input type="checkbox"/> Power Loss/Surge   | <input type="checkbox"/> Other  |   |                                   |  |   |   |   |                               |  |   |                                     |  |   |  |   |                                |

# Picklist Print

January-16-13 8:35:43 AM

Page 1

Work Order ID: 95653

\*95653\*

Parent Item: D3997-21

\*D3997-21\*

Parent Item Name: Placard

Start Date: 1/16/13

Required Date: 1/30/13

Start Qty: 10.00

Required Qty: 10.00

Comments: IPP rev A 10.01.12 new issue Prelim EC verified by:DD

| Component Item ID/<br>Item Name | Replacement<br>Item ID | Mfg/<br>Purch | Bin<br>Item | Primary<br>Location | Last<br>Location | Route<br>Seq ID | Unit of<br>Measure | Qty on<br>Hand | Qty per Kit | Total<br>Qty | Qty<br>Issued | Date<br>Issued | Status |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|
| D3997-21P                       |                        | Purchased     | No          |                     |                  |                 | Each               | 0.0000         |             | 10           |               |                |        |
| *D3997-21P*                     |                        |               |             |                     |                  |                 |                    |                | **          |              |               |                |        |
| Placard                         |                        |               |             |                     |                  |                 |                    |                |             |              |               |                |        |

43/01/21 (10)

NCR: Yes / No

## WORK ORDER NON-CONFORMANCE / UPDATE

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

|  |   |   |                                      |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |
|--|---|---|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--|----------------------------------|--|------------------------------------|--|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Work Order Update <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><table style="width: 100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table> | Skid-tube <input type="checkbox"/>   | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> |  |
| Skid-tube <input type="checkbox"/>                           | Crosstube <input type="checkbox"/>  | Water Jet <input type="checkbox"/>  | Engineering <input type="checkbox"/> |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |
| Machining <input type="checkbox"/>                           | Small Fab <input type="checkbox"/>  | Prod. Eng. Coord. <input type="checkbox"/>  | Quality <input type="checkbox"/>     |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |
| Thermoforming <input type="checkbox"/>                       | Finishing <input type="checkbox"/>  | Rec/Store/Packaging <input type="checkbox"/>  | Other <input type="checkbox"/>       |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |
| Large Fab <input type="checkbox"/>                           | Composite <input type="checkbox"/>  | Supplier <input type="checkbox"/>   |                                      |                                    |                                    |                                      |                                    |                                    |  |                                  |  |                                    |  |                                |                                    |                                    |                                   |  |

| Root Cause    | Date | Step | Qty | Description of work order update or Non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|---|-------------------|--------------------|-------------|--------------|--------------|
| Doc/Data      |      |      |     |   |                   |                    |             |              |              |
| Equip/Tooling |      |      |     |   |                   |                    |             |              |              |
| Operator      |      |      |     |   |                   |                    |             |              |              |
| Material      |      |      |     |   |                   |                    |             |              |              |
| Setup         |      |      |     |   |                   |                    |             |              |              |
| Other         |      |      |     |   |                   |                    |             |              |              |
| Process       |      |      |     |   |                   |                    |             |              |              |
| Supplier      |      |      |     |   |                   |                    |             |              |              |
| Training      |      |      |     |   |                   |                    |             |              |              |
| Unapproved    |      |      |     |   |                   |                    |             |              |              |

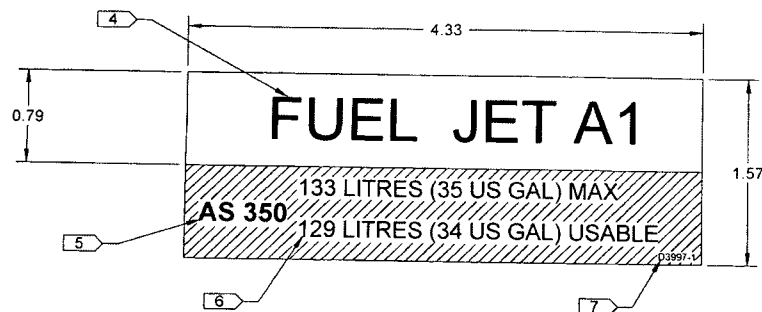
### FAULT CATEGORY

| Landing Gear  | General                                 | Other  |
|---|---|--|
| <input type="checkbox"/> Bending                      | <input type="checkbox"/> Bend           | <input type="checkbox"/> Grain                           |
| <input type="checkbox"/> Centre Not Concentric to O/S | <input type="checkbox"/> BOM/Route      | <input type="checkbox"/> Hardware                        |
| <input type="checkbox"/> Cracks                       | <input type="checkbox"/> Broken/Damaged | <input type="checkbox"/> Inspection Incomplete           |
| <input type="checkbox"/> Crushed/Crimped.             | <input type="checkbox"/> Burrs          | <input type="checkbox"/> Instructions Incomplete/Unclear |
| <input type="checkbox"/> Cuffs                        | <input type="checkbox"/> Contamination  | <input type="checkbox"/> Maintenance                     |
| <input type="checkbox"/> Heat Treat                   | <input type="checkbox"/> Countersink    | <input type="checkbox"/> Mislabeled                      |
| <input type="checkbox"/> Inspection Strip in Tube     | <input type="checkbox"/> Cut Too Short  | <input type="checkbox"/> Misread                         |
| <input type="checkbox"/> Ripples in Bend              | <input type="checkbox"/> Drill Holes    | <input type="checkbox"/> Offset                          |
| <input type="checkbox"/> Torque Waves in Extrusion    | <input type="checkbox"/> Drawing        | <input type="checkbox"/> Out of Calibration              |
| <input type="checkbox"/> Turning Sequence             | <input type="checkbox"/> Finish         | <input type="checkbox"/> Out of Sequence                 |
| <input type="checkbox"/> Wave/Twist in Tube           | <input type="checkbox"/> Folio          | <input type="checkbox"/> Outside Dimensions              |
|   |   | <input type="checkbox"/> Ovalized                        |
|   |   | <input type="checkbox"/> Over/Under tolerance            |
|   |   | <input type="checkbox"/> Part Incorrect                  |
|   |   | <input type="checkbox"/> Part Lost/Missing               |
|   |   | <input type="checkbox"/> Part Moved                      |
|   |   | <input type="checkbox"/> Positioned Wrong                |
|   |   | <input type="checkbox"/> Power Loss/Surge                |
|   |   | <input type="checkbox"/> Pressure/Forced                 |
|   |   | <input type="checkbox"/> Temperature/Cure                |
|   |   | <input type="checkbox"/> Weld                            |
|   |   | <input type="checkbox"/> Wrong Stock Pulled              |
|   |   | <input type="checkbox"/> Other                           |

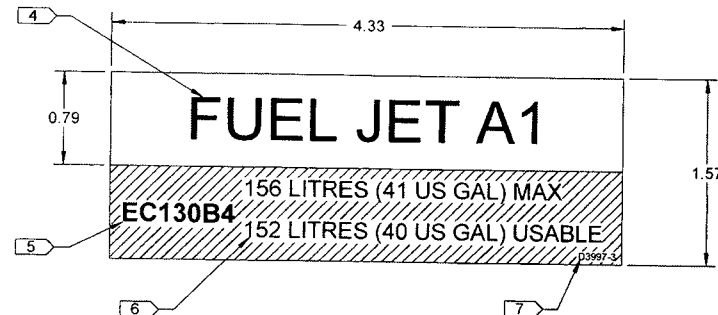
| DART AEROSPACE<br>PART NUMBER | JOHN CAMERON AVIATION<br>PART NUMBER |
|-------------------------------|--------------------------------------|
| D3997-1                       | JCA-M47-P1                           |
| D3997-3                       | JCA-M47-P2                           |

| PART NUMBER | INSTALLATION INSTRUCTIONS                    |
|-------------|--|
| D3997-1     | FOR AS350 AIRCRAFT - ADJACENT TO FUEL FILLER |
| D3997-3     | FOR EC130 AIRCRAFT - ADJACENT TO FUEL FILLER |

UNCO  
SUBJ  
V  
C  
N<sup>o</sup> 95653 MLJ  
13-01-16



**D3997-1 PLACARD**



**D3997-3 PLACARD**

**RELEASED**  
2010-01-11  
MD

**NOTES:**

- 1) MATERIAL: 3M 7 MIL MASKING FILM #8522CP OR AVERY IPM #2031
- 2) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 3) UNITS: INCHES UNLESS OTHERWISE NOTED
- 4) 36 PT FONT, BLACK TEXT ON WHITE BACKGROUND
- 5) 16 PT BOLD FONT, WHITE TEXT ON BLACK BACKGROUND
- 6) 14 PT FONT, WHITE TEXT ON BLACK BACKGROUND
- 7) 6 PT FONT, WHITE TEXT ON BLACK BACKGROUND

|            |             |    |          |
|------------|-------------|----|----------|
| A          | NEW ISSUE   |    | 09.10.05 |
| REV.       | DESCRIPTION | BY | DATE     |
| DESIGN     |             |    |          |
| DRAWN      |             |    |          |
| CHECKED    |             |    |          |
| MFG. APPR. |             |    |          |
| APPROVED   |             |    |          |
| DE APPR.   |             |    |          |
| DATE       | 09.10.05    |    |          |

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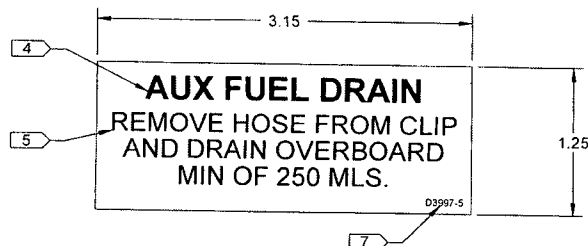
DRAWING NO. **D3997** REV. A  
SHEET 1 OF 6  
TITLE **PLACARD** SCALE NTS

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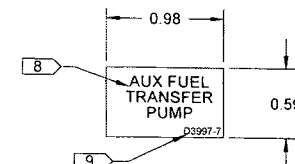
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| DART AEROSPACE<br>PART NUMBER | JOHN CAMERON AVIATION<br>PART NUMBER |
|-------------------------------|--------------------------------------|
| D3997-5                       | JCA-M47-P3                           |
| D3997-7                       | JCA-M47-P4                           |
| D3997-9                       | JCA-M47-P5                           |
| D3997-11                      | JCA-M47-P6                           |

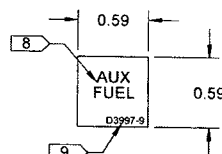
| PART NUMBER | INSTALLATION INSTRUCTIONS                   |
|-------------|---|
| D3997-5     | ON TANK ADJACENT TO FUEL DRAIN              |
| D3997-7     | ADJACENT TO PUMP SWITCH ON INSTRUMENT PANEL |
| D3997-9     | IN AIRCRAFT SWITCH PANEL                    |
| D3997-11    | ON TANK OUTBOARD SURFACE                    |



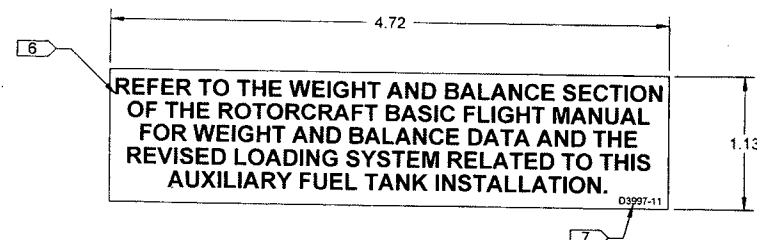
**D3997-5 PLACARD**



**D3997-7 PLACARD**



**D3997-9 PLACARD**



**D3997-11 PLACARD**

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- NOTES:
- 1) MATERIAL: 3M 7 MIL MASKING FILM #8522CP OR AVERY IPM #2031
  - 2) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
  - 3) UNITS: INCHES UNLESS OTHERWISE NOTED
  - 4) 20 PT FONT, BLACK TEXT ON WHITE BACKGROUND
  - 5) 16 PT FONT, BLACK TEXT ON WHITE BACKGROUND
  - 6) 14 PT BOLD FONT, BLACK TEXT ON WHITE BACKGROUND
  - 7) 6 PT FONT, BLACK TEXT ON WHITE BACKGROUND
  - 8) 10 PT FONT, WHITE TEXT ON BLACK BACKGROUND
  - 9) 6 PT FONT, WHITE TEXT ON BLACK BACKGROUND

|            |          |  |
|------------|----------|--|
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| DRAWN      |          |  |
| CHECKED    |          |  |
| MFG. APPR. |          |  |
| APPROVED   |          |  |
| DE APPR.   |          | DRAWING NO. <b>D3997</b><br>TITLE <b>PLACARD</b>         |
| DATE       | 09.10.05 | SHEET 2 OF 6<br>SCALE NTS                                |

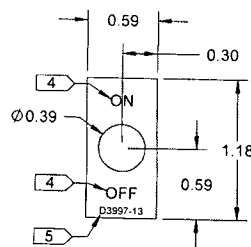
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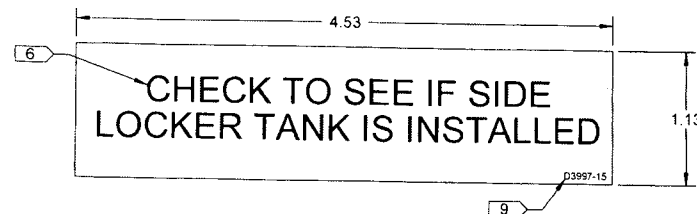
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| DART AEROSPACE<br>PART NUMBER | JOHN CAMERON AVIATION<br>PART NUMBER |
|-------------------------------|--------------------------------------|
| D3997-13                      | JCA-M47-P7                           |
| D3997-15                      | JCA-M47-P8                           |
| D3997-17                      | JCA-M47-P9                           |
| D3997-19                      | JCA-M47-P10                          |

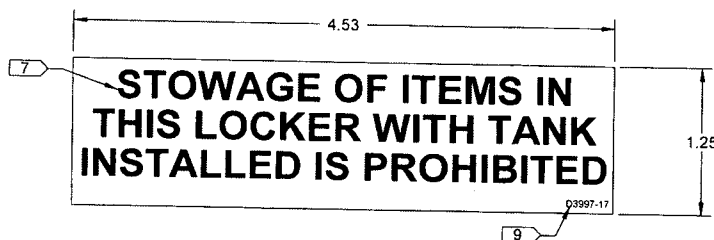
| PART NUMBER | INSTALLATION INSTRUCTIONS                            |
|-------------|--|
| D3997-13    | AROUND FUEL PUMP ON/OFF SWITCH                       |
| D3997-15    | ON BAGGAGE LOCKER OUTER SURFACE BELOW RELEASE BUTTON |
| D3997-17    | ON TANK OUTBOARD SURFACE                             |
| D3997-19    | AT VENT LINE OUTLET ON AIRCRAFT                      |



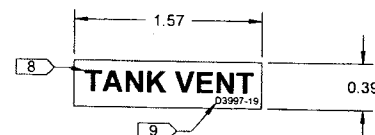
**D3997-13 PLACARD**



**D3997-15 PLACARD**



**D3997-17 PLACARD**



**D3997-19 PLACARD**

- NOTES:
- 1) MATERIAL: 3M 7 MIL MASKING FILM #8522CP OR AVERY IPM #2031
  - 2) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
  - 3) UNITS: INCHES UNLESS OTHERWISE NOTED
  - 4) 10 PT FONT, WHITE TEXT ON BLACK BACKGROUND
  - 5) 6 PT FONT, WHITE TEXT ON BLACK BACKGROUND
  - 6) 22 PT FONT, BLACK TEXT ON WHITE BACKGROUND
  - 7) 24 PT BOLD FONT, BLACK TEXT ON WHITE BACKGROUND
  - 8) 18 PT BOLD FONT, BLACK TEXT ON WHITE BACKGROUND
  - 9) 6 PT FONT, BLACK TEXT ON WHITE BACKGROUND

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2010-01-11

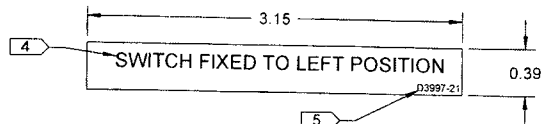
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| CHECKED    |          |  |
| MFG. APPR. |          |  |
| APPROVED   |          |  |
| DE APPR.   |          | DRAWING NO.<br>D3997                                     |
| DATE       | 09.10.05 | TITLE<br>PLACARD   |
|            |          | REV. A<br>SHEET 3 OF 6<br>SCALE<br>NTS                   |

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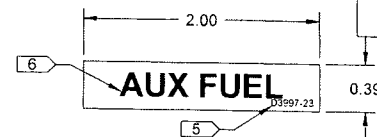
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| DART AEROSPACE<br>PART NUMBER | JOHN CAMERON AVIATION<br>PART NUMBER |
|-------------------------------|--------------------------------------|
| D3997-21                      | JCA-M47-P13                          |
| D3997-23                      | JCA-M47-P14                          |
| D3997-25                      | JCA-M47-P15                          |
| D3997-27                      | JCA-M47-P16                          |

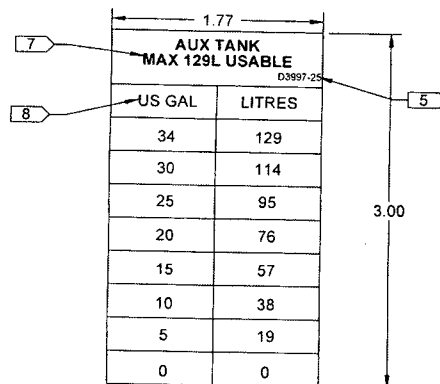
| PART NUMBER | INSTALLATION INSTRUCTIONS               |
|-------------|---|
| D3997-21    | ON AUX FUEL GAUGE SWITCH PLATE          |
| D3997-23    | ON AUX FUEL GAUGE                       |
| D3997-25    | NEXT TO AUX FUEL GAUGE<br>(AS 350 ONLY) |
| D3997-27    | NEXT TO AUX FUEL GAUGE<br>(EC 130 ONLY) |



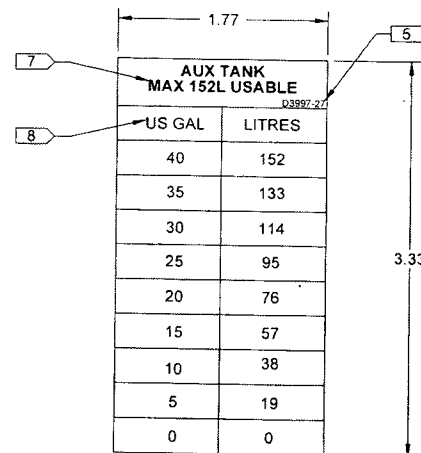
D3997-21 PLACARD



D3997-23 PLACARD



D3997-25 PLACARD



D3997-27 PLACARD

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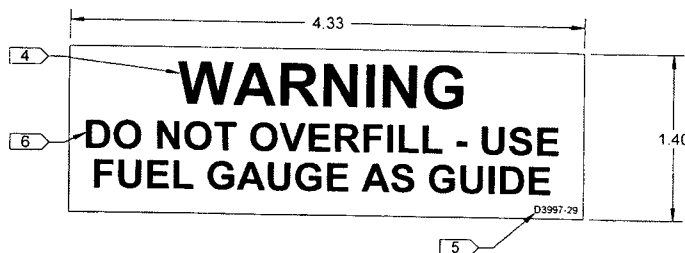
NOTES:

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- 2) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 3) UNITS: INCHES UNLESS OTHERWISE NOTED
- 4) 12 PT FONT, WHITE TEXT ON BLACK BACKGROUND
- 5) 6 PT FONT, WHITE TEXT ON BLACK BACKGROUND
- 6) 20 PT BOLD FONT, WHITE TEXT ON BLACK BACKGROUND
- 7) 10 PT BOLD FONT, WHITE TEXT ON BLACK BACKGROUND
- 8) 10 PT FONT, WHITE TEXT ON BLACK BACKGROUND

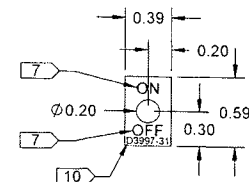
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| DESIGN     |          | DART AEROSPACE LTD<br>HAWKESBURY, ONTARIO, CANADA  |
| DRAWN      |          |  |
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| MFG. APPR. |          | D3997 SHEET 4 OF 6   |
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| DART AEROSPACE<br>PART NUMBER | JOHN CAMERON AVIATION<br>PART NUMBER |
|-------------------------------|--------------------------------------|
| D3997-29                      | JCA-M47-P17                          |
| D3997-31                      | JCA-M47-P18                          |
| D3997-33                      | JCA-M47-P19                          |
| D3997-35                      | JCA-M47-P20                          |

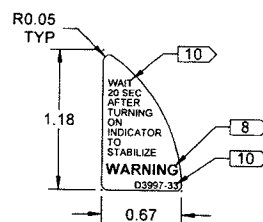
| PART NUMBER | INSTALLATION INSTRUCTIONS                                    |
|-------------|--|
| D3997-29    | ADJACENT TO FUEL FILLER                                      |
| D3997-31    | AROUND AUX FUEL GAUGE ON/OFF SWITCH ON INSTRUMENT PANEL      |
| D3997-33    | ON AUX FUEL GAUGE COVER                                      |
| D3997-35    | ADJACENT TO AUX FUEL GAUGE ON/OFF SWITCH ON INSTRUMENT PANEL |



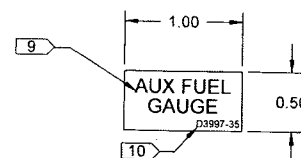
**D3997-29 PLACARD**



**D3997-31 PLACARD**



**D3997-33 PLACARD**



**D3997-35 PLACARD**

**NOTES:**

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- 3) UNITS: INCHES UNLESS OTHERWISE NOTED
- 4) 36 PT BOLD FONT, RED TEXT ON WHITE BACKGROUND
- 5) 6 PT FONT, BLACK TEXT ON WHITE BACKGROUND
- 6) 24 PT BOLD FONT, BLACK TEXT ON WHITE BACKGROUND
- 7) 10 PT FONT, WHITE TEXT ON BLACK BACKGROUND
- 8) 9 PT BOLD FONT, WHITE TEXT ON BLACK BACKGROUND
- 9) 12 PT FONT, WHITE TEXT ON BLACK BACKGROUND
- 10) 6 PT FONT, WHITE TEXT ON BLACK BACKGROUND

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2010-01-11  
MP

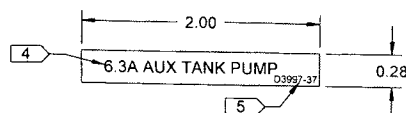
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| DESIGN     |          | <b>DART AEROSPACE LTD</b>   |
| DRAWN      |          | HAWKESBURY, ONTARIO, CANADA |
| CHECKED    |          | DRAWING NO. D3997           |
| MFG. APPR. |          | REV. A                      |
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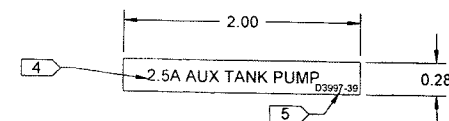
95653

| DART AEROSPACE<br>PART NUMBER | JOHN CAMERON AVIATION<br>PART NUMBER |
|-------------------------------|--------------------------------------|
| D3997-37                      | JCA-M47-P21                          |
| D3997-39                      | JCA-M47-P22                          |
| D3997-41                      | JCA-M47-P23                          |
| D3997-43                      | JCA-M47-P24                          |

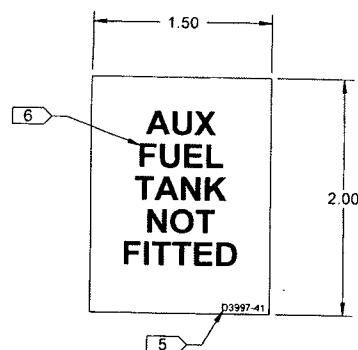
| PART NUMBER | INSTALLATION INSTRUCTIONS       |
|-------------|---------------------------------|
| D3997-37    | ADJACENT TO CB INSTALL          |
| D3997-39    | ADJACENT TO CB INSTALL          |
| D3997-41    | ON TANK ADJACENT TO FUEL FILLER |
| D3997-43    | ON TANK EARTH POINT             |



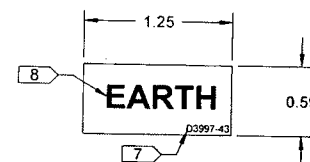
**D3997-37 PLACARD**



**D3997-39 PLACARD**



**D3997-41 PLACARD**



**D3997-43 PLACARD**

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2010-01-11

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- 4) 10 PT FONT, WHITE TEXT ON BLACK BACKGROUND
- 5) 6 PT FONT, WHITE TEXT ON BLACK BACKGROUND
- 6) 20 PT BOLD FONT, WHITE TEXT ON BLACK BACKGROUND
- 7) 6 PT FONT, BLACK TEXT ON WHITE BACKGROUND
- 8) 20 PT BOLD FONT, BLACK TEXT ON WHITE BACKGROUND

|            |          |  |              |
|------------|----------|--|--------------|
| DESIGN     |          | <b>DART AEROSPACE LTD</b>  |              |
| DRAWN      |          | HAWKESBURY, ONTARIO, CANADA  |              |
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| MFG. APPR. |          | TITLE <b>PLACARD</b>   | SHEET 6 OF 6 |
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# Studio de Lettrage

210 Main Street W  
Hawkesbury, Ontario K6A 2H6

## INVOICE

Invoice No.: 19413  
Date: 01/18/2013  
Ship Date: 01/17/2013  
Page: 1  
Re: Order No. WO9149

Sold to:

Dart Aerospace Ltd  
1270 Aberdeen  
Hawkesbury, Ontario K6A 1K7

Ship to:

Dart Aerospace Ltd  
Hawkesbury, Ontario

Business No.: 82500 7651 RT0001

| Item No.                                 | Unit | Quantity | Description | Tax | Unit Price | Amount |
|--|------|----------|-------------|-----|------------|--------|
|  |      | 10       | D3997-7P    | H   | 8.00       | 80.00  |
|  |      | 10       | D3997-15P   | H   | 8.00       | 80.00  |
|  |      | 10       | D3997-21P   | H   | 8.00       | 80.00  |
|  |      | 10       | D3997-31P   | H   | 8.00       | 80.00  |
|  |      | 10       | D3997-35P   | H   | 8.00       | 80.00  |
|  |      | 10       | D3997-39P   | H   | 8.00       | 80.00  |
|  |      | 10       | D3997-41P   | H   | 8.00       | 80.00  |
|  |      |          | PO # 18849  |     |            |        |
|  |      |          | H - HST 13% |     |            | 72.80  |
|  |      |          | HST         |     |            |        |
| Studio de Lettrage HST: #825007651RT0001 |      |          |             |     |            |        |
| Shipped By: Tracking Number:             |      |          |             |     |            |        |
| Comment:                                 |      |          |             |     |            |        |
| Sold By:                                 |      |          |             |     |            |        |
| Total Amount                             |      |          |             |     |            | 632.80 |

\*\*\*\*Certificate of Conformity\*\*\*\*

**Customer:**

Studio Lettrage

**Purchase Order #:**

18849

**Packing Slip #:**

wo# 9149

**Part #:**

**Serial #:**

**Description:** D3997-7P/D3997-15P/

D3997-21P/D3997-31P/D3997-35P/

D3997-39P/D3997-41P

**Quantity:**

**Certification:**

We hereby certify that:

1. The above the listed items were manufactured, repaired and/or inspected in accordance with applicable drawings and/or specifications;
2. All work was accomplished in accordance with the Dart Aerospace Purchase Order;
3. Results of all inspections, chemical or physical tests, as well as other evidence, which shows the acceptability of raw materials, parts and/or assembly components are on file and available for inspection at any time.

**Authority:**

3M

**APPROVAL:** Sandy Collin

**Signature:** Sandy Collin

**Title:** Project coordinator

**DATE:**

18 January 2013



## Product & Instruction Bulletin 8522

Release 1, Effective September 2008

See *Bulletin Change Summary and end of Bulletin*

This Bulletin now includes Instruction Bulletin 4.23

# Scotchcal™ Changeable Opaque Imaging Media 8522

## Product Description

## Recommended Types of Graphics and End Uses

### For Thermal Inkjet Printing

This durable, 7 mil, opaque, changeable film is optimized for use with selected thermal inkjet printers and inks. Ink dries quickly on the film. When overlaminated, it is warranted for medium term, outdoor weatherable graphics, and long term indoor graphics.

When constructed and used as described in this Bulletin, these types of graphics and end uses may be warranted by the 3M™ MCS™ Warranty. Please read the entire Bulletin for details.

- First surface images (the image is on top of the film) for opaque posters and signs, including:
  - Graphics for vans, personal vehicles, trucks and buses
  - Novelty posters
  - Retail and point-of-purchase displays
  - Information graphics such as maps and directories
  - Entertainment promotions in museums, zoos, parks, theatres, sports venues
  - Education and presentation graphics
  - Legal and courtroom exhibits
- For flat or simple curved surfaces, with or without rivets, used in vertical ( $\pm 10^\circ$ ) applications

## Limitations of End Uses

3M specifically does not recommend or warrant the following uses, but please contact us to discuss your needs or recommend other products.

### Unsuitable End Uses for This Product

- Not for electronically cut individual letters and numbers
- Fleet applications in areas that use salt for winter road maintenance
- Application to non-warranted substrates, including wallboard
- Applications subjected to gasoline vapors or spills
- Application to corrugated or highly irregular surfaces or sharply raised areas
- Graphics applied to stainless steel, including stainless steel vehicles
- On flat surfaces with rivets, tenting of 4 to 10 mm around rivets may be expected; rivets may be cut around to eliminate tenting.
- Graphics made for automotive Original Equipment Manufacturers (OEM); contact 3M Automotive Division at 1-800-328-1684 for alternatives.

## About Water-Based Inkjet Technology

Standard inkjet technology is water based. Water-based chemistry is susceptible to the extremes of heat and humidity. This is a factor in most product constructions on the market. Read the Fabrication, Shelf Life and Storage sections in this Bulletin. Staying in the middle of these ranges always provides optimum performance.

## Compatible Products

### 3M Graphic Materials

For complete details about graphic construction options, recommended uses and durability, refer to the Product Bulletin for the base film or substrate (media) you are using. See **3M Related Literature** at the end of this Bulletin.

This Bulletin provides details about the base film and construction options and warranty. Additional specific information about compatible products can be found in the Product and Instruction Bulletins listed in **3M Related Literature** at the end of this bulletin.

### 3M Graphic Materials

For complete details about graphic construction options, recommended uses and durability, refer to the Product Bulletin for the base film or substrate (media) you are using. See **3M Related Literature** at the end of this Bulletin.

#### Film

- 3M™ Scotchcal™ Opaque Imaging Media 8522

#### Overlamine

- 3M™ Scotchcal™ Luster Overlamine 8519
- 3M™ Scotchcal™ Matte Overlamine 8520

#### Printers and Inks

| HP Designjet Printers   | HP Inks  |
|---|--|
| <ul style="list-style-type: none"> <li>• 2500CP and 2000CP</li> <li>• 2800CP and 3800CP</li> <li>• 3500CP and 3000CP</li> <li>• HP Designjet 5000 and 5500</li> </ul> | <ul style="list-style-type: none"> <li>• Designjet CP Ink System UV (pigment-based)</li> <li>• Designjet CP Inkjet System (imaging ink)</li> </ul> |
| <ul style="list-style-type: none"> <li>• Z6100</li> </ul>   | <ul style="list-style-type: none"> <li>• HP 91 Vivera Ink System</li> </ul>  |
| Epson Printers  | Epson Inks   |
| <ul style="list-style-type: none"> <li>• Stylus Pro 9500</li> <li>• Stylus Pro 10000 printer</li> <li>• Stylus Pro 10600 printer</li> </ul>                           | <ul style="list-style-type: none"> <li>• Archival Inks</li> </ul>  |

## Characteristics

These are typical values for unprocessed product; processing may change the values. Contact your 3M representative for a custom specification.

| Characteristic                   | Description  |
|----------------------------------|--|
| Media                            | 7 mil, white, opaque graphic film  |
| Liner                            | Low-slippage, lay flat paper   |
| Adhesive                         | Changeable, pressure sensitive   |
| Thickness                        | <b>Media with adhesive:</b> 7.5 to 8 mil (nominal)   |
| Warranted application substrates | See next page.   |
| Application surfaces             | Flat or simple curved surfaces, with or without rivets, used in vertical ( $\pm 10^\circ$ ) applications (no corrugations) |
| Application temperature range    | 28° to 110°F (-2° to 43°C) (air and surface)   |
| Removable                        | For up to one year; see Warranty Information   |



| Characteristic                   | Description  |
|----------------------------------|--|
| Warranted application substrates | <p>Some substrates may "out-gas", resulting in tiny bubbles throughout the surface of the graphic. For maximum performance, be sure the substrate you select is properly cleaned and prepared as recommended by the manufacturer. See Instruction Bulletin 5.1 for additional information.</p> <ul style="list-style-type: none"> <li>• Alodine (anodized aluminum)</li> <li>• Automotive panels (automotive painted steel)</li> <li>• Fruehauf (painted aluminum)</li> <li>• FRP (fiberglass reinforced plywood)</li> <li>• Glass</li> <li>• Imron® (polyurethane-painted metal panel)</li> <li>• Acrylic</li> <li>• Sintra™ board</li> </ul> <p>Note: Use on any other substrate is strictly on a graphics manufacturer and customer test and approve basis. Test for both adhesion and removal characteristics. The plasticizer in some banner materials may migrate. This may cause the edge of the graphic to peel or lift off of the banner. For optimum performance, follow the guidelines in the section, Creating A Laminated Overlap, on page 4.</p> |

## Warranty Information

The warranty given in the Product Bulletin that is current at the time you purchased the film is the one that 3M will honor. **The warranties in the following table(s), given in years, are for finished graphics exposed in a vertical exposure in the United States except the Desert Southwest.** See the warranty sections following this table for additional information.

### 3M™ MCST™ Warranty Durability for Finished Graphics

| Construction (film and overlamine on warranted substrate) | HP Printers & Inks |         | Epson Printers & Inks |         | Removal                                    |
|---|--------------------|---------|-----------------------|---------|--|
|   | Outdoor            | Indoor  | Outdoor               | Indoor  |  |
| 8522/8519   | 3 years            | 5 years | 2 years               | 5 years | 1 year without chemical strippers or tools |
| 8522/8520   |                    |         |                       |         |  |

## Warranty and Limited Remedy

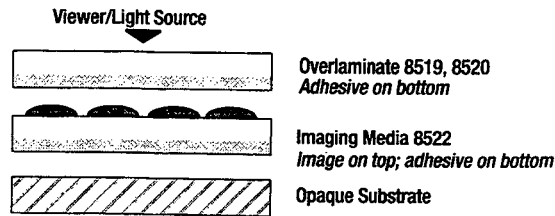
The following is made in lieu of all other express or implied warranties, including any implied warranty of **merchantability** or fitness for a particular purpose or implied warranty arising out of a course of dealing, custom or usage of trade: all 3M products are warranted to be free of defects in materials and manufacture at the time of shipment and to meet the specifications stated in this Product Bulletin. 3M will replace or refund the price of any 3M materials that do not meet this warranty within the specified time periods. These remedies are exclusive. **In no case shall 3M be liable for any direct, indirect, or consequential damages, including any labor or non-3M materials charges.**

See the Graphics Market Center Warranty Brochure, which gives the terms, additional limitations of the warranty, if any, and limitations of liability.

## Graphic Construction Options

### Opaque Graphics

Opaque graphics made with imaging media 8522 require an overlamine and an opaque substrate.



## Fabrication

### Shop Temperature

Acceptable: 60° to 95°F (15° to 35°C)  
Optimum: 65° to 73°F (18° to 23°C)

### Shop Humidity

Acceptable: 20% to 80%  
Optimum: 45% to 60%

### Condition the Media Before Use

These steps are especially important if you are operating outside the conditions recommended under Fabrication, above.

- Leave the media in its original packaging until you are ready to condition and use it.
- The day before you need it, remove the media from the box and remove the plastic.
- Condition the media for 24 hours in the same environment as the printer.

## Printer Settings for Optimum Quality

Refer to your Hewlett Packard printer manual for detailed operating instructions.

The quality of a printed image depends on a combination of factors: correct media selection, printing software and raster imaging processor (RIP), shop conditions, etc.

The printers qualified to use this media have print mode options that are programmed specifically for these media. Current charts that show the various modes and printing dpi, and the quality results you can expect are available at [www.hp.com](http://www.hp.com) under the website's support section. We recommend that you print the same image at all of these settings to determine acceptable print and productivity results.

The highest quality settings are usually desirable for backlit applications.

The correct media selection makes most other necessary adjustments to the printer.

- For the HP DesignJet CP 2000 or 3000 series printers, select the **Opaque Vinyl UV** setting.
- For the HP Designjet 5000 series printers, select the **3M Changeable UV** setting or the **HP Durable Gloss UV** or **HP Colorfast Vinyl** setting.
- For the Z series printers, refer to HP's website or printer manuals.

Note: The HP printer settings lay down less ink per pass, which results in better ink absorption and quicker drying times.

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- For the Z series printers, refer to HP's website or printer manuals.

Note: The HP printer settings lay down less ink per pass, which results in better ink absorption and quicker drying times.

## Drying Guidelines

Usually, the media can be laminated within 10 minutes after printing. However, especially in high humidity conditions, we recommend waiting 15 to 30 minutes before laminating.

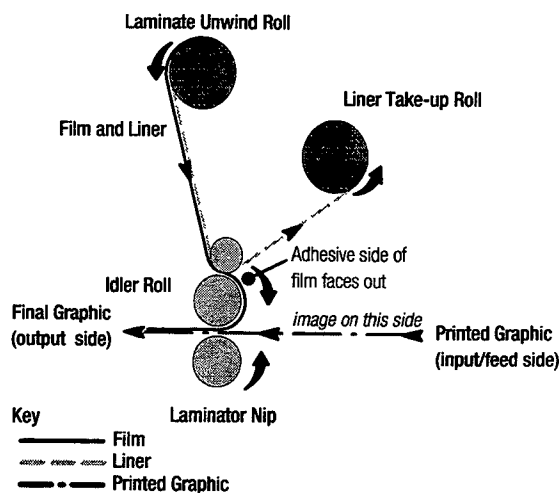
Use care when handling graphics that have not been laminated to avoid scratching and abrasion.

Graphics made with this media and ink combination typically may be wound directly on a take-up roll after printing.

## Overlamine

Whether or not you want a warranted graphic, an overlamine is recommended to enhance durability, especially in outdoor applications.

FIGURE 1  
Typical Laminator Thread-up



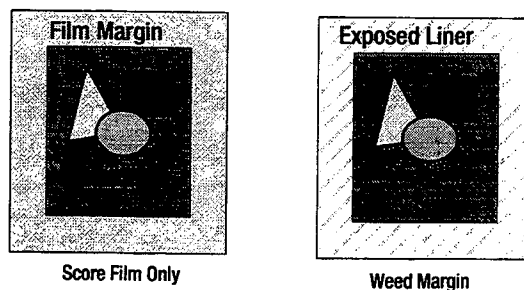
## Creating a Laminated Overlap

Creating a laminated overlap helps ensure that the graphic does not peel or lift away from certain banner materials that may be subject to plasticizer migration. This method may also be used for flat, rigid or flexible sign applications.

1. Print the graphic as usual.
2. On all sides of the graphic, score *the film only* to the correct, final graphic dimension *without cutting through the liner*.

Weed away the excess film, leaving the bare liner exposed around the graphic. See FIGURE 2.

FIGURE 2  
Trim and Weed Film Margin Only



3. Laminate the graphic as usual (see page 5), making sure that at least one inch of the bare liner is covered by the laminate. See FIGURE 3.